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no foreground (that is, no objects nearer than the limits of purely binocular relief-perception), since otherwise the very principle of stereoscopy shows the picture flat. Corresponding to this refinement in viewing the stereoscopic pictures, these must now be taken with lenses whose distance apart is fairly close to the distance between the observer's eyes.

This instrument, which marks a great advance in the technique of reproductive art, is psychologically as well as physically interesting. A picture seen through the monocular Verant appears not only of natural size but also of natural depth. There is here no binocular stereoscopy, and Dr. von Rohr, who invented these lenses, ascribes this effect of depth to Helmholtz's representative factors (Vorstellungsmomente). This phenomenon shows how barbarous is the ordinary practice of viewing paintings and photographs with two eyes. The Verant will afford means of studying the perception of near objects with distant accommodation, whereas in previous stereoscopes the conditions have been the reverse. It remains, finally, to find out whether the fact that for distant objects in this stereoscope the two eyes are directed parallel, does not contribute as much to the viridical effect as does the enlargement of the picture, on which the inventor chiefly relies. For the apparent size of an object (as well as its apparent distance) depends on the convergence of the eyes, and in previous stereoscopes it has never been possible to adjust the pictures for parallel convergence, because of the therewith coordinated relaxation of the focus. It may be feared, however, that this last admirable feature may actually prevent the popular use of the Verant stereoscope, for it has been found that the untrained observer who looks into an ordinary stereoscope insists on converging sharply as if it were a newspaper, and generally needs some little practice before he is able to relax his convergence to even the slight degree required. This fact has for some time prevented the American firm of Underwood and Underwood from introducing stereoscopes with strongly magnifying prisms and more nearly parallel convergence.

The above three papers have nearly the same content; but that of Wandersleb has the fullest and clearest exposition.

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L'evolution comme principe philosophique du devenir. W. M. KOZLOWSKI. *Revue Philosophique,* February, 1904, pp. 113–135.

The conception of evolution as a scientific theory is apparently of no value when applied to the universal syntheses with which philosophy deals. In the infinite reach of thought, the orderly changes which science perceives become fortuitous concourses of atoms. The author aims here to determine the philosophical significance of evolution in terms of a method which is based on the contradictions between the intuitional and discursive aspects of the theory.

For the first contradiction it may be said, on the one hand, that all observation of natural processes reveals an asymptotic principle of change. In general, neither an experience of the self nor a given state of the universe is ever exactly repeated. Thermo-dynamics furnishes the type-illustration of this in the phenomena of entropy, *i. e.,* the energy of a dynamic system is always escaping and becoming non-available, as far as this particular system is concerned. A clock runs down and the solar system approaches equilibrium. This equilibrium or *fin du monde* will prevent the repetition of any previous state. It is not possible, according to the second law of this science, to isolate perfectly a system, and, thereby, put its energy through a perfect cycle. On the other hand, if we pass from the sphere of direct observation to the realm of abstract thought and mentally grasp the universe as a totality, we find that the asymptotic principle of change has become a principle of periodicity. If the conception of the universe be all-inclusive, the energy of such a universe must be perfectly conserved, as there would be no external quantity with which it could interact. The first law of thermo-dynamics, which states the conservation of energy, conforms to this rational demand and furnishes a periodic principle of change.

In the problem of determinism appears the second contradiction treated between observation and thought. The asymptotic evolution of experience gives determinism. If we have components, we can determine resultants. If we know present conditions, we can previse the future, etc. Entropy seems to operate here also; we never get the whole body of conditions, and, hence, our prevision is imperfect. Passing again to the totality of the universe as grasped by thought, we find that this determinism becomes indeterminism. If the causal series is a circle, it amounts to no causation at all; while if we isolate the active principle from the causal series, we deny our assumption of totality.

Can thought isolate the universe? Do we experience a true conception of such isolation? What are the implications of the endeavor to grasp the conception of totality? Is there not entropy in thought processes as well as in dynamic processes? How can a quantity be isolated if it be not isolated from some other quantity either within or without it? Such questions indicate philosophy's future work. Its share in the solution of the contradictions between observation and thought is the investigation of the so-called demands of consciousness for unity, etc. As for science, it is yet sponsor for the second law in thermo-dynamics and the principle of entropy. Can it justify thought by producing a cycle?

These contradictions between intuition and discursive thought appear complete. Any present reconciliation must be one of method. Both science and philosophy should accept a 'critical methodological dualism' composed of these two factors. Let each endeavor to acquit the other. All departments of knowledge must work in harmony to resolve the dualism, if this be possible, and to indicate the better ways of regarding it, if it be inevitable.

This article indicates a tendency which even now outcrops, to call in question the fundamental conceptions of logic and mathematics. Science evidently expects philosophy to appropriate the asymptotic evolution of experience. This can be done only by a criticism of the demand of consciousness for unity. If, as Professor Seth has pointed out, experience of unity is unknown, and the unitary self can not be isolated from experience, what is this but entropy in the field of knowledge?

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Skepticism of the Instrument. H. G. WELLS. *Mind,* July, 1904, pp. 379–393.

This paper was read before the Oxford Philosophical Society, November 8, 1903. It presents the philosophical foundations of one who would, if he did not feel this a 'quite preposterous modesty,' call himself a mere amateur in philosophy. According to his own account, the youthful training of Mr. Wells was entirely scientific and objective, and he came to reflect deliberately upon philosophical problems through the studies of educational method and theory, of logic and psychology that he made in preparing to take a teaching diploma. His studies of comparative anatomy and of evolution led him to regard all human powers as imperfect 'compromises and adaptations,' and this view still dominates him when he comes to the study of logic, causing him to mistrust seriously the efficacy of its methods as a means of attaining a correct view of objective facts. He is skeptical of the instrument on three counts. First, it proceeds by classification, and he doubts the objective reality of all classification. Things, in point of fact, are unique. Thought, working by classes, is continually in error. When its objects are near at hand, it can correct its errors by the check of practical results, but in philosophical or theological matters there can be no such check, hence it is like 'firing at an inaccessible, unmarkable and indestructible target with a defective rifle and variable cartridges.' A second count against logic is that it constantly thinks the negative as though it were something positive and real and full of meaning, whereas it is just that vague unknown which thought can not fathom. In consequence the mind is not justified in dealing with it as though it had positive content and value. Lastly, our ideas are on different levels, and when we attempt to deal with the same object by methods of thinking that are not on the same level, contradiction arises. It would be absurd to speak of cutting an atom in two with a knife. The atom is an object of conception, the knife of ordinary sensuous experience. The two ways of thinking are not to be fitted together thus. Now human logic is continually liable to just such absurdities, as witness the conflict between the theories of freedom and predestination.

Mr. Wells does not hesitate to extend his skepticism to morals and religion. There is no universal validity for human thought. One result of great value springs, Mr. Wells thinks, from this view. It is that the good and the sacred become more a matter of individual taste and judgment, 'ethical, social and religious teaching' is brought 'into the province of poetry,' and our sense of humor can rejoice in profound contradictions instead of being confined to petty issues. One may well feel that such an attitude, however diverting to a temporary mood, is hardly destined to be accepted by human intelligence as permanently satisfactory.